

## PHILADELPHIA HAS BIG NOV. MEETING

F. R. Palmer Talks Timbre and Tool Steel on Nov. 27

By Adolph O. Schaefer

Snow and rain conspired to make it difficult to turn out for the third regular meeting of the season for the Philadelphia chapter. Nevertheless as large a number as usual, perhaps with slightly redder faces, gathered on Nov. 27.

The entertainment committee had prepared a treat. Steel treaters pondered and scratched heads over the title of the Coffee Talk, "Music, the Universal Language." "Lace Making in the Pyrenees" would have sounded just as appropriate.

Dr. James Francis Cooke, president of Theo. Presser & Co., world's largest music publishing house, quickly cleared away all doubts. All those who had taken some form of music lessons at some time in their lives were first asked to raise hands. Almost everybody was in the affirmative. Then came a challenge to name any business or profession in which Dr. Cooke could not name some leader who was also a musician.

The interest of the group once aroused, the talk went on—the most surprising array of facts, figures, and incidents we had ever heard. We know now how important music is to education, pathology, and science.

The talk of the evening was delivered by Frank R. Palmer, assistant to the president of the Carpenter Steel Co. The title was "Straight Carbon Tool Steel." Mr. Palmer explained the origin of the word "timbre" as applied to carbon tool steel and showed its importance and effects.

The idea that carbon tool steel was just carbon tool steel, was quickly dispelled. In its place we have the new idea that carbon tool steel is a material of unlimited usages and applications. Mr. Palmer has the knack of talking in such a clear and logical manner that everyone can follow his discussion. The illustrations used were clear cut and easily seen and the whole gathering enjoyed the talk.

After a rising vote of thanks to the speaker, the crowd went out into the wet and snowy world, well repaid for the evening's excursion.

## RHODE ISLAND MEN HOLD METAL COURSE

Dr. J. P. Walsted in Charge of 20 Metallography Lectures

A course of twenty sessions on "Metallography" arranged by the Rhode Island chapter of the Society and the division of engineering of Brown University, began Nov. 20 at the University's engineering laboratory in Providence. Fridays 7 to 9:30 P. M. are class nights.

Dr. John P. Walsted, assistant professor of physical metallurgy at Massachusetts Institute of Technology, is conducting the course.

The course consists of lectures and laboratory work on the fundamental principles of metallography and their application to ferrous and nonferrous metals of industrial importance. The alloy diagrams will be discussed and illustrated with materials of commercial importance, such as the brasses, bronzes, bearing metals, cast irons, carbon steels and alloy steels. Application of the principles will be made to heat treatment, including a study of structures resulting from annealing, normalizing, spheroidizing, hardening, tempering and drawing. Some consideration will be given to the examination of steels without the aid of a microscope and to the study of impurities in steel.

The laboratory work is closely related to the lecture material through the use of slides and the projection of actual specimens on a large screen. There will be examination individually by the students of a large variety of previously prepared specimens. Only a limited amount of the students' time will be devoted to the polishing and etching of samples.

The course was planned jointly by members of the Rhode Island chapter and the staff of the extension division of the University. Fee for the course of 20 sessions is \$20.00.

## TWO GOVERNMENT PHYSICIST POSITIONS WILL BE FILLED

Feb. 2, 1932, Last Entry Date

The United States Civil Service Commission has announced open competitive examinations for associate physicist (salary \$3,200 per year) and assistant physicist (salary \$2,600 per year). Examinations are to fill vacancies in various services.

Competitors will not be required to report for examination, but will be rated on education, experience, published reports, etc. Applicants must have college degrees and must have majored in physics.

Competition will close Feb. 2, 1932. Full information may be obtained from the secretary of the U. S. Civil Service Board of Examiners at the post office or custom house in any city, or from the Civil Service Commission in Washington.

## 2000 AT NORTHWEST WELDING SESSIONS

3-Day Conference and Exhibit Draws from Six States

By Alexis Caswell

The Northwest chapter conducted a most successful Welding Conference Nov. 19, 20 and 21 at the plant of the Caterpillar Tractor Co. in Minneapolis.

An unusually interesting program was presented by speakers on subjects of direct interest to all those engaged in welding. In addition, there were exhibits, demonstrations, moving pictures and lantern slides showing the latest developments in welding equipment and its applications.

The attendance was far greater than had been anticipated. Approximately 2000 attended, many of whom came from the states of Montana, North and South Dakota, Wisconsin, Iowa and Minnesota, as well as from St. Paul and Minneapolis. The actual registration was almost one thousand, which, plus an allowance of 15% for those who did not register, showed there were almost 1100 visitors present. All expressed themselves more than compensated for their attendance.

Continued on Page Four

## NEW JERSEY HEARS PAPER ON CARBIDES

G. J. Comstock Is Speaker; Film on Tubes Presented

By J. Sammon

On Nov. 4, the New Jersey chapter had its regular monthly meeting at the Washington Ball Room in Newark, with an attendance of 131.

The Crocker-Wheeler Electric Mfg. Co., East Orange, N. J., had on exhibit a large display of electric motors. Some of the men explained to the members the various parts of a motor and the intended application of each motor.

P. A. Frasse & Co., Inc., presented a movie entitled "Walls Without Welds" which was made by the National Tube Co. This picture shows the making of seamless steel tubing, and some of the processes that do not show clearly in the movie form, are shown on animated diagrams.

After the showing of the picture Chairman J. F. Wyzalek then presented the speaker of the evening, Gregory J. Comstock, director of research, Fifth Sterling Steel Co., McKeesport, Pa., who gave an informal talk on "Cemented Tungsten and Tantalum Carbides."

Mr. Comstock illustrated his talk with slides showing the equipment and various processes employed in manufacturing cemented hard carbide materials.

Mr. Comstock's practical experiences with these materials stood him in good stead, as his talk aroused such interest that more than half the members had questions to ask him at the conclusion of his talk, and he was kept busy for one hour and fifteen minutes answering these questions.

## 200 DETROIT MEN GO TO ANN ARBOR

Prof. Upthegrove Speaks To Crowd of Enthusiastic Men

By O. W. McMullan

The Detroit chapter met at Ann Arbor Nov. 14. The members attended the Michigan-Michigan State football game in a group. Although the game was played in a steady down-pour of rain, it was a good game, and at least the spirits of those present were not dampened. The meeting proved popular as the 200 reservations made were not sufficient to satisfy all demands for tickets. Members were present from Lansing, Flint, Saginaw, and Battle Creek, besides those of the Ann Arbor group, at whose invitation the meeting was held.

The dinner was held in the Michigan Union in the evening, and a short technical talk was given by Professor Clair Upthegrove on the "Properties of Metals at High Temperatures." He stated that work on metals at high temperatures was first done about 100 years ago. The present line of investigation started in 1912, but most of the work has been done since 1924. There is now a demand for such materials and the University has become active in this work.

Before the war, most of the work was on tensile and other short-time tests. Since the war, it has been on creep and long-time tests. The work at the University has been mostly within the range of 750-1250° F. for power plant work. Accuracy of measurement of extension is one of the necessities in performing this work. Creep is deflection under a period of time and may be either plastic or elastic. It tells the expectation of life of the material. Work has been done in trying to find a short method which may be substituted for the long-time tests.

One method to be tried is by the use of a machine with two specimens, one inside the furnace and one outside. In this way the load may be changed either up or down or the temperature may be changed. Different materials have different types of curves, but generally there is a first period of rapid change. Effort is being made to eliminate this first period.

Strain hardening and recrystallization may also have a great effect on the materials. X-ray studies are to be made to find out how the creep takes place. The influences of alloy additions and heat treatment are also to be determined. The effect from the standpoint of torsion or shear is also to be studied. Besides creep, work is being done on scaling and on the effect of gases for retort materials.

Professor Brumm, head of the journalism department at the University, gave a talk on "The Man and His Job." He expressed the opinion that the man should either find interesting work to do or change his viewpoint so that his work might become interesting. One of his main thoughts was that a man should have other interests outside of his job in order that, should the job fail him, he would still have some interest in life.

## NOTRE DAME OPENS SEASON

Dr. E. G. Mahin Talks on "Fatigue" at First Session, Oct. 30

By V. Uhlmeier

The first meeting of the scholastic year of the Notre Dame group was held on the evening of Oct. 30 in Chemistry Hall.

The speaker of the evening was Dr. E. G. Mahin, whose topic was "Fatigue." The talk was illustrated by means of lantern slides, which portrayed the various types of fatigue failure, and some theories of fatigue of metals. An extended discussion period followed Dr. Mahin's talk.

## A. F. A. CHOOSES PHILADELPHIA

The 36th annual convention and exhibit of the American Foundrymen's Association will be held in Philadelphia, May 2 to 6, 1932, according to an announcement just made by the Association. The announcement also states that all Convention and Exhibit activities will be centered in the new Municipal Convention Hall, located at 34th Street and Vintage Avenue.

## An Open Letter from Philadelphia Chapter

November 24, 1931

American Society for Steel Treating.

Dear Sirs:—

The Philadelphia chapter has given considerable attention to the changes proposed in the National By-Laws. Many ideas have been expressed, and we have been unable as yet to arrive at any definite conclusions. Conversations we have had with members of other chapters lead us to believe that they, too, are in the same situation.

We therefore ask that you transmit our request to the National Board of Directors that action on this matter be withheld for at least six months. We feel that plenty of time should be allowed for full consideration of a matter of so much importance to the future welfare of the Society.

We also request that a copy of this letter be published in the December issue of the REVIEW.

Yours very truly,  
A. O. Schaefer,  
Secretary-Treasurer  
Philadelphia Chapter.

## SYRACUSE MEN STUDY HIGH SPEED STEEL'S PROPERTIES

A. H. Kingsbury October Speaker

The Syracuse chapter enjoyed an interesting October meeting. The meeting proper was preceded by a dinner. Following the dinner the members listened to a lecture by A. H. Kingsbury, on "Some of the Properties of High Speed Steel."

Mr. Kingsbury is metallurgist in charge of high speed steels at the Halcomb Steel Co. plant in Syracuse. His lecture covered the theoretical side of the hardening of high speed steels and the effect of the component elements on its properties.

The various theories given were aptly substantiated by lantern slides showing structures of the material in its various conditions. Mr. Kingsbury also had hardness curves and photomicrographs to show the effect of interrupted quenching on high speed steels.

Mr. Kingsbury's theories were backed by actual experiences which he has encountered in his many years of work with high speed steels in consumers' plants.

## YORK'S CLASSES IN STEEL BEGAN NOV. 5

A. W. F. Green Conducts Series of 17 Lectures at Y. M. C. A.

York chapter is sponsoring a course in the heat treatment and metallography of steel which includes 17 weekly lectures beginning Thursday, Nov. 5, at 7:30 P. M. The York, Pa., Y. M. C. A. is co-sponsor of the course which will be held at the Educational Division of the Y.

Arthur W. F. Green, metallurgist of the American Chain Co., and a very active member of the chapter, will conduct the course. Teaching is not new to Mr. Green, since for the past 8 years, while a member of the Philadelphia chapter, he conducted that chapter's metallography and heat treatment course at Temple University.

The course will be presented according to the following outline:

**Introductory.** A discussion of physical metallurgy, principles of chemistry and physics and physical properties of steel.

**Manufacture of Iron and Steel.** The reduction of ores into iron and steel with notes on the mechanical working of steel.

**Metallography.** The microscope and its use, including the preparation of samples. The development and evaluation of microscopic structures. Identification of the micro-constituents of steel. Study of the critical points, including brief description of thermal analysis, and the detection of critical points.

**Pyrometry.** The study of the measurement of temperature and equipment available for the procedure.

**Theory of Hardening.** This study will be intimately linked with that of critical points, crystallography, solid solutions and transformations.

**Heat Treatment.** Procedure and proper conditioning of steel by heat, including notes on quenching, furnace application, and fuels.

**Alloy Steels.** The various alloys used for the making of steels, and their applications.

**Inspection and Testing.** Methods used for determination of physical properties of steel, and definition of the finding thereof.

The tuition fee of \$25.00 includes social membership of the Y. M. C. A., notebooks and other material required for the course. To members of the Y the fee is \$17.00.

## CHICAGO S.A.E. AND A.S.S.T. IN MEETING

T. H. Wickenden Addresses 200 at Meeting on Nov. 3

By A. W. Sikes

The Chicago section of the Society of Automotive Engineers, as hosts, and the Chicago chapter of the American Society for Steel Treating, who were their guests, held a joint dinner meeting on Nov. 3. After dinner from 50 to 75 more members arrived, giving a total of approximately 200 or more to hear the talks of the evening.

The speakers were A. Parker Van Zandt, who gave a coffee talk on the Century of Progress Exposition, which is to be held in Chicago during 1933, and Thomas H. Wickenden, International Nickel Co., who gave a technical paper entitled "The Properties and Selection of Automotive Steels." O. R. Schonrock, consulting metallurgist, O. R. S. Engineering Co., and chairman of the governing board of the Chicago section of the S. A. E., opened the meeting and presided during a short business session of his society. He then turned the meeting over to D. L. Colwell, metallurgist, Stewart Die Casting Co., and chairman of the Chicago chapter of the A. S. S. T., who was technical chairman of the joint meeting of the two societies.

Mr. Van Zandt gave a very glowing account of the Century of Progress Exposition. It was interesting to learn that the original suggestion that such an exposition be held, commemorative of the scientific and industrial achievements of the last century, was made by Michael Pupin, professor of electromechanics at Columbia University. It was gratifying to hear also that the finances necessary for the completion of the Exposition were pledged and that a major portion had already been collected.

Mr. Wickenden discussed the properties of automotive steels and the methods of selecting the proper steels for specific uses. The effects of alloying elements, such as chromium, molybdenum, manganese, nickel and vanadium, were represented graphically. The use of corrosion-resistant and heat-resistant steels was thoroughly discussed and was illustrated by means of slides showing the changes in various properties with different quenching and drawing temperatures. Some of the slides showed the results of studies made by E. J. Janitzky of the Chicago chapter.

In conclusion, Mr. Wickenden answered many questions from members of the two organizations who were interested in various matters discussed. After the introduction of several prominent metallurgists in the audience, among whom was Dr. Marcus A. Grossmann, who is now with the Illinois Steel Co., and was welcomed to his first meeting of the Chicago chapter, the meeting was adjourned.

## CLEVELANDERS OBSERVE HOW TRACTORS ARE MANUFACTURED

See Plant; Hear Furnace Talk

By H. B. Pulsifer

The November meeting of the Cleveland chapter was held at the plant of the Cleveland Tractor Co. on Nov. 2.

A hundred members and guests were shown about in small groups so as to inspect all parts of the interesting plant. Members of the staff explained the new system of production and assembly. After the inspection the groups gathered in the cafeteria to view movies of tractors in service and a film on asbestos until the dinner was served.

After all of the 120 assembled had been served, E. G. Jones, attorney and engineer for the company, gave a short history of the development of the company. R. K. Mitchell, works manager, then discussed particular features of the plant. E. F. Ross spoke briefly about the Boston convention and Kenneth Briggs of the National Office told about the activities of the Society.

The address of the evening was by Sam Keener of the Electric Furnace Co., Salem, O. He gave a very interesting illustrated talk on the "Relative Merits of Gas, Oil and Electric Furnaces." Many slides were shown and distinctive applications for each type pointed out and explained.



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## NEW YORKERS HEAR BEN F. SHEPHERD

"Tool Steel Personality" is  
November Meeting Topic

By F. H. Clark

The New York chapter had its November meeting on the 16th with dinner served at Loft's restaurant and the meeting held subsequently at the Merchants' Association of New York in the Woolworth Building.

The subject for the evening was "Personality in Tool Steels" presented by B. F. Shepherd, metallurgist for the Ingersoll-Rand Co., Phillipsburg, N. J. Tool steels are bought first of all on a chemical specification, but the idea of cleanliness has come to be more and more important so that today the acid etch for macrostructure is used to a large extent to determine presence of non-metallic inclusions.

Mr. Shepherd believes that even with the present method of testing tool steels there is still much to be desired. Samples of steels with the same chemical analysis show great differences in the depth of hardness after being quenched from the same temperature. This variation is so important that the Ingersoll-Rand Co. carries out tests on each heat of tool steel to be fabricated into tools in their plant to determine the exact hardness depth at several different quenching temperatures. This variable is called by Mr. Shepherd "hardenability."

Another example of the failure of chemical analysis to specify a satisfactory material was in the case of hollow rock drill steel. Tools made from material with the same chemical analysis showed marked differences when placed in the field. Fatigue values varied enormously. Tools apparently sound in every respect developed on the surface incipient cracks which caused low fatigue resistance. Mr. Shepherd found that grinding only 0.005 in. from the surface of these drills prevented failure.

In heat treating carbon-manganese steels, the speaker observed that, given the same intensity of quench, a finer grain size gives greater surface hardness than a coarser grain size. He also said that, of two identical carbon-manganese steels heat treated to the same final hardness, the one with fine grains had better impact strength than the one with coarser grains.

## NEW JERSEY GOLFERS DEFEAT LEHIGH; PLAN RETURN MATCH

Director Sinks 60 Ft. Putt.

By J. B. Mudge

With all due respect to Bobby Jones and other golfing luminaries, when the Lehigh golfers took on the New Jersey chapter contingent, the residents of the "Little Town of Bethlehem" (how appropriate the name) must have felt that a second national open was under way, by the roar of the crowd and screaming of sirens which followed the sinking of a 60-foot putt on the second green by Ben Shepherd. As he modestly explained later, raw nerve did it.

Be that it was, the Lehigh chapter (R. G. Shimer, B. F. Shepherd, F. R. Palmer and A. T. Spooner) were hosts to the New Jersey chapter (H. D. McKinney, H. Barlow, H. H. Hornbrugh and J. B. Mudge) at the Saucon Valley Country Club on Oct. 10. A preliminary round of golf followed by lunch and then "The Match" followed by dinner at the Bethlehem Club, just vaguely describes the high points in a day filled with incidents too numerous to mention.

Suffice it to say that New Jersey won the golf match 3 to 1. A return engagement in New Jersey's back yard is something to look forward to.

## BUFFALO MEN ENJOY TALK ON CAST IRON

H. E. Bromer Emphasizes the  
Electric Furnace Process

By Clyde Llewellyn

The third regular meeting of the Buffalo chapter in the 1931-1932 season was held at the Buffalo Hotel on Nov. 12. Dinner was served to 41 members and guests, and there were 83 present at the regular meeting which followed.

The meeting was called to order by Chairman J. H. Birdsong, and, before proceeding with the subject of the evening, he introduced W. H. Eisenman, National Secretary, who was present as our guest. Mr. Eisenman gave a very interesting talk, outlining, among other things, the present condition of the Society, its plans, aims, publications, etc.

Due to the illness of J. Kent Smith, who was scheduled to address this meeting on the subject of cast iron, it was necessary for us to make other arrangements after our programs had been printed and sent out. In his stead, we were very fortunate in getting the consent of H. E. Bromer, metallurgist, Standard Foundry Co., Racine, Wis., to address us on the subject of "Electric Furnace Cast Iron."

Mr. Bromer delivered a very interesting paper. He fully explained different cast iron manufacturing methods, including the cupola process, electric furnace cold melting process and the duplexing process, which combines cupola and electric furnace practices. The importance of frequent and careful analyses of the product and control of the carbon and silicon contents was stressed and the added uniformity which is possible in electric furnace cast iron was outlined, especially as pertaining to the structure, Brinell hardness and machinability of the finished castings.

He further pointed out the increased physical properties which are made possible by the addition of alloys, such as nickel, chromium and molybdenum, and touched lightly on what had been accomplished through the heat treatment of electric furnace cast iron.

At the conclusion of his paper, the meeting was thrown open for discussion, during which a vast amount of interest was shown and numerous questions were asked of Mr. Bromer.

## H. B. KNOWLTON SPEAKS BEFORE TRI-CITY MEMBERS ON NOV. 3

Heat Treatment Is Discussed

About sixty members of the Tri City chapter met at a dinner meeting at the Davenport Chamber of Commerce Nov. 3 to hear H. B. Knowlton, metallurgist in the gas power engineering department, International Harvester Co., Chicago, speak on the "Fundamentals of Heat Treatment and Metallurgical Control."

Mr. Knowlton put considerable emphasis on concentrated stresses in steels which are the cause of most failures. He stated that theoretically the tensile strength of steel may run into millions of pounds per square inch cross sectional area when only one straight line of atoms is considered. However, when several crystals of steel, such as in any common piece of steel, composed of numerous atoms are placed together these atoms do not align themselves. Consequently, only those that are aligned carry the load causing a concentration of stress which obviously causes failure much quicker than if all atoms were receiving an equal portion of the load.

Norman L. MacDonald, secretary of the Moline Y. M. C. A., also gave a brief but interesting discussion of the work done for young men of the Young Men's Christian Association.

## WASHINGTON OPENS SEASON ON OCT. 16

G. V. Luerssen Tells Chapter  
of New Stainless Uses

By William R. Angell

The Washington chapter on Oct. 16 started its monthly meetings with a bang. About thirty members and guests assembled for the dinner in honor of the speaker. Many new members came out to the dinner for the first time, a good indication that future meetings will be well attended. Members who come out to these dinners find they offer a good opportunity to meet the speaker of the evening and to get better acquainted with their fellow members.

R. W. Deitrich, the newly-elected chairman, opened the technical session with a welcome to members, visitors and new members, and expressed his appreciation of the support of the new sustaining member, the American Instrument Co. The meeting was then turned over to Lewis H. Fawcett, vice-chairman, who introduced the technical speaker, George V. Luerssen of the Carpenter Steel Co., whose subject was, "The Cold Treatment of Certain Stainless Steels." The subject was well presented by Mr. Luerssen with the aid of charts and slides. We regret, however, that Mr. Greene, the co-author, was unable to be present.

The hardening of the modified 18-8 corrosion resisting steels offers many possibilities for such parts as springs, pump rods, etc. Studies were also reported on two nickel-silicon steels which were investigated in detail. Physical properties, corrosion results and magnetic permeability values were given after various treatments.

After a lengthy discussion in which many took part, the meeting adjourned after giving Mr. Luerssen a rising vote of thanks for his splendid paper.

## CHICAGO STUDIES X-RAYS AS TOOL FOR TESTING MATERIALS

W. A. Sisson October Speaker

By Harry Hardwicke

"Testing Materials with X-Rays" was the subject of a popular, illustrated lecture by W. A. Sisson, assistant to George L. Clark, radiograph expert, University of Illinois, at the Oct. 8 meeting of the Chicago chapter.

Prior to introducing the speaker, Technical Chairman L. W. Spring, chief chemist for Crane Co. gave a very interesting survey of developments in chemistry and physics, leading up to the address in which the X-Ray was described as a modern tool for engineers.

Mr. Sisson showed about fifty lantern slides in connection with testing materials both for defect and crystal analysis, including heat treatment and working of materials.

The lively discussion that followed the address showed the keen interest in the subject.

## YORK VISITS PLANT; HEARS FINE TALK ON WELDED PIPE

L. B. Grindlay October 14 Speaker

By William F. Allen

The October meeting of the York chapter was held Oct. 14, at Waynesboro, Pa.

A program had been prepared which covered plant visitations in the afternoon to the Pangborn Co., Hagerstown, Md., manufacturers of sand blasting equipment; and the Security Cement Plant of the North American Cement Corp. Delegations of officials of both companies acted as escorts, and explained in detail the operations of each plant.

Following the plant visitations at Hagerstown, the group journeyed to the Anthony Wayne Hotel in Waynesboro, where dinner was served and the meeting held.

The main event of the evening was the fine illustrated lecture given by L. B. Grindlay, metallurgical department, Republic Steel Corp., on "Electric Resistance Welded Pipe." This process of pipe manufacture being new created considerable interest, and a lively discussion period followed the lecture.

"Foundations and Methods of Chemical Analysis by the Emission Spectrum" by Dr. Walther Gerlach and Dr. Eugen Schweitzer, has been published by Adam Hilger, Ltd., 24 Rochester Place, Camden Road, London, N. W. 1, England. This well illustrated book deals with the development of quantitative spectrographic analysis of the common metals. Translation.

## Coming Events of the Chapters

Boston—H. E. Handy, Secretary, Saco-Lowell Shops, Biddeford, Me.  
Jan. 8—Application of Gas to Heat Treating  
Feb. 5—Practical Forging and Forging Problems  
Mar. 4—Iron Castings and Their Heat Treatment  
Apr. 8—X-Ray Testing of Metals—Joint Meeting at Providence  
May 6—Timbre of Tool Steel—B. F. Shepherd  
Buffalo—Clyde Llewellyn, Secretary, Bliss & Laughlin Co.  
Jan. 14—Metallography  
Feb. 11—Nitriding  
Mar. 10—Steel Making  
Apr. 14—Forgings  
May 12—Annual Banquet, Entertainment  
Cincinnati—N. C. Strohmenger, Secretary, Tool Steel Gear & Pinion Co.  
Jan. 7—Stamping, Drawing and Forming  
Feb. 11—Heat Treatment of Stainless Steels of Various Types  
Mar. 10—Metallurgical Control with a Minimum of Expensive Equipment  
Apr. 7—Gear and Gear Steels  
May 5—Welding  
Cleveland—H. B. Pulsifer, Secretary, Ferry Cap & Set Screw Co., Scranton Rd., Cleveland.  
Jan. 14—Joint meeting with S. A. E.  
Jan. 4—Metallography of Stainless Steel  
Feb. 1—Nickel and Its Industrial Applications  
Mar. 12—Flow of Metals  
Apr. 4—Future of Metallurgy  
May 2—Methods for Testing of Various Properties—Plant visitation, National Tube Co., Lorain, Ohio  
Detroit—Gordon Webb, Secretary, Ryan, Scully & Co., Room 410, Donovan Bldg., Detroit.  
Dec. 14—Social Meeting  
Jan. 11—Metallurgy of Aircraft Engines  
Feb. 8—Forgings and Forging Failures  
Mar. 14—Testing  
Apr. 11—Alloying Elements and Grain Size in Steels  
May—Open Date  
Hartford—L. H. Knapp, Secretary, Hartford Electric Light Co., Hartford.  
Jan. 12—Stocking Practice and Technology  
Feb. 9—Metallurgical Application of Gas  
Mar. 8—Surface Hardening Steel  
Apr. 12—High Pressure Vessels  
May 10—Slushing Compounds and Their Use  
June 14—Thirtieth Annual Banquet  
Ontario—L. F. Fitzpatrick, Secretary, Flexible Shaft Co., Ltd., Toronto.  
Jan. 8—Welding  
Feb. 5—Aluminum Bronze  
Mar. 4—Fuels and Furnaces  
Apr. 8—Effect of Furnace Atmospheres  
May 6—High Speed Steel  
June—O. W. Ellis (At Hamilton)  
Philadelphia—A. O. Schaefer, Secretary, Midvale Company, Nicetown, Philadelphia.  
Dec. 18—Smoker  
Jan. 8—Engineers in Industries  
Jan. 29—To be announced later  
Feb. 26—High Speed Steel and Tungsten Carbide  
Mar. 25—Open Meeting  
Apr. 29—Nitriding  
May 27—Plant Visit  
Pittsburgh—H. L. Walker, Secretary, Box 521, N. S. Station, Pittsburgh.  
December—Ladies' Night—Announcement Later  
Jan. 14—Magnetic Materials  
Feb. 11—Certain Practical Applications of X-Rays  
Mar. 10—Commercial Heat Treating  
Apr. 14—Heat Treatable Brasses  
May 12—Aircraft Engine Materials  
June—Annual Outing—Announcement Later  
Schenectady—Floyd C. Kelley, Secretary, General Electric Co.  
Dec. 15—High Speed Steel and Hardening  
Jan. 19—Fish Scale in Finishing Steel  
Feb. 23—Recent Structural and Alloy Steels  
Mar. 15—Non Destructive Testing  
Apr. 19—Heat Treating  
May 17—  
Southern Tier—W. S. Bennett, Secretary, Elmira Water, Lt. & R. R. Co., Elmira, N. Y.  
Jan. 18—  
Feb. 19—  
Mar. 21—  
Apr. 18—  
May 16—  
Springfield—Thomas Jones, Secretary, Chapman Valve & Mfg. Co., Indiana Orchard, Mass.  
Dec. 14—Spark Testing  
Jan. 18—Elding  
Troy—Robert H. Lind, Secretary, Peoples Light Co., Davenport, Iowa.  
Jan. 5—Smoker  
Feb. 2—X-Ray as Used in Industrial Work  
Mar. 1—Welding and Cutting—Elkonite and Carbonyl  
Apr. 5—Continuous Nitriding and Gas Carburization  
May 3—Selection of Heat Treating Equipment  
York—Charles M. Strickler, Secretary, General Machine Works.  
Jan. 13—Machine Forgings  
Feb. 9—Furnace Atmospheres  
Mar. 25—Structural Shapes  
Joint meeting with Engineering Society of York (at York)  
Apr. 13—Quality Practice in the Open Hearth  
May—Chapter night

## H. B. NORTHRUP AT PENN. STATE

Harry B. Northrup has been added to the faculty of the Mineral Industries School of Pennsylvania State College. Mr. Northrup will direct the extension division of the school. Registration in the department of metallurgy of the Mineral Industries School now equals one-half that of the entire school. Dr. D. F. McFarland is head of the department.

## COPPER MOVIE OFFERED CHAPTERS

A two-reel motion picture film portraying the mining, smelting and refining of copper and the fabrication of copper and its alloys into sheets, wire, rods and tubes is offered to chapters of the Society by American Brass Co., Waterbury, Conn. The film can be shown in 30 min. Correspondence regarding the picture should be addressed to A. R. Stocking in the sales department of the company.

## TOOL STEEL TIMBRE ROCHESTER SUBJECT

F. R. Palmer Is Speaker; R. F. Kimber Named Chapter Head

By J. M. Keating

The first meeting of the Rochester chapter for this season was held October 12. At the opening of the meeting I. C. Matthews, secretary, announced the resignation of R. H. Morris as chairman, due to business reasons, and the election of R. F. Kimber to that office. John I. Reid was elected vice-chairman and J. M. Keating was elected to complete the executive committee.

The speaker of the evening, Frank R. Palmer, assistant to the president of the Carpenter Steel Co., was introduced and announced his subject, "Timbre in Tool Steel." He used the term "timbre" to describe the resulting product of carbon tool steel after a brine quench at 1550° F. The depth of case and core grain size from this heat overload is a measure of its timbre and varies in steels of the same analysis from the different heats and steel mills.

He described a test that is made by some consumers of this grade of steel. A bar of stock is milled in steps of 1/32 in., and after quenching the bar is broken at the various steps to note where the core first shows. The timbre is then recorded in terms of the numerator as, for example: If the core were first noted at the break of 10/32 in. this would be reported as No. 10 tough.

He stated that a proper timbre or tough grained metal can consistently be made by scientific control from the melting furnace and rolling mills, and that some consumers are giving precedence to the timbre number over chemical analysis in their specifications so as to reduce failure through brittleness in the manufacture of tools built to withstand shocks.

His talk was well illustrated with lantern slides. The meeting was well attended and the speaker held the audience by his knowledge and fine delivery. A discussion period followed his talk.

## BALTIMORE GROUP MAKES ITS DEBUT

Emil Gathmann Made Chairman;  
Eight Others Hold Offices

By S. Proctor Rodgers

The newly authorized Baltimore group of the Society held its first meeting at the Hotel Emerson on the evening of Oct. 30. The meeting was preceded by a dinner arranged by the temporary committee, of which Emil Gathmann was the chairman. He presided throughout the evening.

At the election, the following permanent organization was elected: Chairman, Mr. Emil Gathmann; Vice-Chairman, Mr. Alex L. Feild; Secretary-Treasurer, Mr. John Borland; H. C. Ballard, G. M. Nauss, S. P. Rodgers, T. R. Matthews, Mark Gathmann, and J. J. Lacy, members of the Executive Committee.

To inaugurate the new group properly, W. H. Eisenman, National Secretary, welcomed the group and presented the charter. The Board of Directors of the Society was represented by W. B. Coleman, H. D. McKinney, and Mr. B. F. Shepherd, all of whom spoke to the new group with words of wisdom and encouragement.

Mr. Coleman also gave a short but very interesting talk on "Tool Steels," which drew forth considerable discussion.

The Engineers' Club of Baltimore was represented by F. A. Allner, its president, who welcomed the new addition to Baltimore.

J. F. Adams, past chairman of the Philadelphia chapter, and R. Walter Dietrich, chairman of the Washington chapter, brought greetings from their respective chapters.

## U. S. WANTS TWO ENGINEERS Graduate Mechanical Engineers Wanted For Ordnance Work

The U. S. Civil Service Commission announces competitive examinations for associate ordnance engineer (salary \$3200 a year) and assistant ordnance engineer (salary \$2600 a year). Duties are to supervise the design, development and test of ammunition and especially the packing thereof, and to prepare specifications.

Applicants must be graduate engineers, preferably in mechanical engineering. Competition closes Jan. 12, 1932. Information may be obtained at the post office in any city.



## YORK MEN SPONSOR BIG NOV. MEETING

With Local Engineering Club  
Has Meeting on Furnaces

By Arthur W. F. Green

The Nov. 20 meeting of the York chapter proved one of tremendous interest and a decided step forward in the service this young chapter is rendering to the community it serves. Since the meeting was a joint one with the Engineering Society of York, a very good attendance resulted. There were about sixty people present—members, guests and friends of the chapter and the Engineering Society.

The speaker was M. H. Mawhinney, fuel engineer, Electric Furnace Co., Salem, Ohio. His subject was "Furnace Design." Mr. Mawhinney detailed in his talk some of the important considerations that must be entered into when metallurgical furnaces are considered.

Mr. Mawhinney paid no respect to any fuel in particular, but went on to show that each type of fuel had specific applications and that cost and handling had considerable to do with proper selection. The illustrations, which were used in the nature of lantern slides, were of a very fine type, clear and ably showed the points Mr. Mawhinney tried to stress.

This talk, which was given at the specific request of several of our members, was received by all with very much interest as was evidenced by the whole-hearted discussion entered into by the majority present.

At this meeting a report was made to the chapter regarding its educational activities and the results of this work to date stated. The course at the local Y. M. C. A. has an enrollment of sixteen individuals. This course was started in operation on Nov. 5 and great interest has been shown by the entire enrollment. The course at Harrisburg will start on Dec. 7, with a minimum enrollment of fifty. The handling and direction of these courses is by Arthur W. F. Green, metallurgist at American Chain Co., Inc., and he is supported by a committee in the chapter, made up of individuals representing the several communities in which it operates.

## DAYTON MEN HOLD TWO GOOD MEETINGS

J. V. Emmons Is Oct. Speaker;  
F. B. Coyle Gives Nov. Talk

By Richard R. Kennedy

The October meeting of the Dayton chapter was held at the Engineers' Club on Oct. 5. J. V. Emmons of the Cleveland Twist Drill Co. gave an interesting and instructive talk on the subject of "Tool Steel." Mr. Emmons gave the causes of tool failure as sudden shock, fatigue, soft tools, overheating to softening point and normal failure due to wear.

He discussed the different types of tool steel, including the plain carbon steels, which are the most widely used tool steels at the present time, and the various alloy tool steels, the use of which is constantly increasing.

Alloy tool steels, although more costly than carbon steel, for many purposes justify their higher cost by the superior results obtained from their use. The non-deforming manganese steels, the shock resisting vanadium steels, the fast-finishing steels and finally the high speed steels all have fields in which they are superior.

Mr. Emmons concluded his talk with an excellent discussion of practical methods of testing, hardening and drawing tool steels.

The November meeting of the chapter was held on Nov. 2. An excellent dinner was served, after which W. E. Campbell, purchasing agent of the Frigidaire Corp., gave a coffee talk on "Commodities."

The main event of the evening was a talk on "Recent Developments in Gray Cast Iron" delivered by F. B. Coyle, metallurgist of the International Nickel Co. The talk was illustrated with a number of excellent charts showing the effect of nickel and other elements on the properties of cast iron.

Mr. Coyle discussed the beneficial effect of nickel in reducing chill, refining the grain and increasing the tensile strength of cast iron. He described methods of heat treating nickel cast iron by which the physical properties are greatly improved. The new alloy cast irons Nihard and Niresist which are finding many uses in industry were described.

The animated discussion following the talk showed the interest of the members in the subject.

## 1932 DIRECTOR H. D. MCKINNEY HONORED AT BANQUET OCT. 28

Thirty Friends Are Present

A testimonial dinner to Harry D. McKinney, vice-president of Driver-Harris Co., who was nominated for director of the Society at the Boston Convention, was tendered him at the Greenbrook Country Club on Oct. 28 by his friends.

A. H. d'Arcambal, who will take office Jan. 1 as president of the Society, W. B. Coleman, who will become vice-president at the same time, and W. H. Eisenman, national secretary, represented the national organization.

J. F. Wyzalek and John H. Johnson, chairman and secretary respectively of the New Jersey chapter, were present, as was F. A. Elshoff, who made arrangements for the banquet.

Also in attendance were: J. R. Adams, H. V. Apgar, E. F. Cone, B. D. Christian, A. L. Doremus, Frank L. Driver, R. H. Patch, B. F. Shepherd, C. S. Conkright, W. R. Frazer, W. H. Hall, A. M. McWilliams, J. B. Mudge, J. F. Heath, C. H. Reiss, J. L. Auer, C. F. Cook, J. A. Doyle, H. M. Foster, A. J. Palmer, A. B. Ross, G. S. Walters and Carl Witte.

## MOVIES AND TALK PLEASE BALTIMORE

G. A. Richardson Offers Both  
at First Technical Meeting

By S. Procter Rodgers

Though this group, the Society's youngest, was not inaugurated until late in the Fall, it was decided not to let November slip by without a meeting. Nov. 30 was the date chosen and George A. Richardson, technical lecturer for Bethlehem Steel Co., was secured.

Mr. Richardson brought with him the finest motion pictures of the steel industry that we had ever seen. They included every major manufacturing operation from the raw materials to the finished product.

Some people have seen the great ore boats which traverse the Great Lakes, carrying raw materials to the steel centers, but to those who have not, the fact that more tonnage goes thru the locks of Sault Ste. Marie than thru the Panama Canal, was an eye-opener. Another amazing thing was the speed with which these ships are unloaded at their destination. Giant, one-man operated scoops, looking like huge prehistoric animals, dip down into the ships and unload them in five hours.

Then came pictures of the most modern coke ovens and blast furnaces. We had a look into the interior of an open hearth furnace and saw it tapped and poured into ingot molds. From the ingots, thru the rolling mills to the finished shapes was one of the most interesting parts of the movie trip. Bolts, nuts, wire and structural shapes were the result. Of these operations, the rolling of huge 36" structural shapes weighing 300 pounds per foot was the most spectacular. The pictures of the Gray Mill were the first that have ever been released to the public. Due to the tremendous reduction, the ingot is of a special shape. It starts out some eight feet long and finishes over 125 feet in length.

These are only a few of the high spots which filled a most worth while two hours. In addition to this unusual picture, we had the pleasure of taking in two new members, which swells our total to 51. The next meeting will be held Dec. 21.

## GOVERNMENT NEEDS TWO METALLURGISTS

The United States Civil Service Commission announces open competitive examinations for the positions of associate and assistant metallurgist. Salary for the former position ranges from \$3,200 to \$3,800 yearly. The assistant metallurgist gets from \$2,600 to \$3,200.

Optional subjects include ferrous, nonferrous and physical metallurgy and ore dressing. Candidates must have been graduated from a recognized institution with a bachelor's degree in chemistry, physics or metallurgy. Associate metallurgist candidates must have had at least 3 years of experience, mostly in research or development work. For assistant metallurgist, candidates must have had 2 years practical experience, part of which must be of investigational or laboratory nature.

Further information may be obtained from the Civil Service Commission in Washington or from any post office. Applications must be on file in Washington not later than Dec. 30, 1931.

## W. R. FRAZER TALKS TO SYRACUSE MEN

Tells Chapter How Airplane  
Engine Starters Are Made

By James M. Hutton

Dr. W. R. Frazer of the Eclipse Aviation Corp., East Orange, N. J., gave an interesting talk on aircraft engine starters before the Syracuse chapter on Nov. 24.

Efficiency, weight, and compactness are demanded by users, and when compared with the size of the engines they have to turn over in zero weather, one readily concedes that these requirements are being adequately met.

To prevent vibration, noise, wear and breakage, these units have to be made with clock-like precision. This calls for stringent specifications. All incoming materials are analyzed and visually inspected; form tools are projected and examined to be sure they conform to the required contour; routine charts show that some gears are normalized three times during fabrication before the final heat treatment; gears are inspected 100 per cent for hardness, and parts past inspection never show more than a two point Rockwell variation; sharp corners are taboo.

Electric heat is the medium used for the heat treating on all steel parts and tool steel practice is used. In some instances the teeth are cut after treatment to insure concentricity. The Rockwell of these gears is 43-45 on the "C" scale and was referred to by Dr. Frazer as tough hardness.

Dr. Frazer explained in detail the requirements of starters; namely, that they had to make positive connection, overcome compression and be able to turn the engine over at speed in zero weather. Clutch mechanism was demonstrated to show how destruction of the starters was prevented in the case of back-firing. Several types were on display, including the portable types which are used at air ports. A rousing vote of thanks was given Dr. Frazer on conclusion of his talk.

Chairman G. C. Farnsworth then introduced our popular National Secretary, W. H. Eisenman. His presence added considerable interest to the meeting. He spoke at length on the affairs of the Society and mentioned the sound financial condition, policies and benefits to members, etc., etc. It was evident, by the way his speech was received and the applause rendered when he concluded, that his talk was a revelation to many of those present.

## NEW HAVEN MEN IN BIG JOINT MEETING

Sponsor Welding Meeting with  
A. S. M. E. and Engineers Club

By R. T. Porter

Bridgeport was host to the New Haven chapter on the evening of Nov. 19. This meeting was a joint meeting of our chapter, the Engineers' Club of Bridgeport and the American Society of Mechanical Engineers.

At the dinner preceding the meeting, Hon. A. E. Lavery, president of the Senate of State of Connecticut, gave a very inspiring talk on the benefits the community could derive from such an organization as ours. He also spoke briefly on the great progress and the possibilities of the State of Connecticut. Chairman Fred Dawless introduced our National Secretary, W. H. Eisenman, to the members and guests, and Bill in a very clever way disclosed to us the surprising amount of literature and the benefits we receive annually from the National Society.

A. F. Hilton presided as technical chairman. The guest speaker of the evening meeting was Everett Chapman, director of engineering and research of Lukenweld, Inc. Mr. Chapman's subject was "Welding."

He discussed the principles of design involved in producing welded structures, reduction in weights, design calculations, ductile welds, impact values, photo-elastic study of stresses in machinery parts, metallurgical effects and welding procedure.

Many interesting slides were shown depicting various structures and results of tests following investigations in the Lukenweld Research Laboratory.

Mr. Chapman's talk proved to be timely and interesting, and many practical questions were asked of the speaker during the open discussion period.

The meeting was very well attended by approximately ninety men. Waterbury Farrel Foundry and Machine Co. was awarded the attendance banner. The next meeting will be in Waterbury.

## NEW JERSEY HOLDS SEASON'S FIRST SECTIONAL MEETING

Over 110 Turn Out at Paterson

By J. Sammon

New Jersey chapter's first sectional meeting of the season was held at Paterson on Oct. 20. Advance notices had created much interest, for there was an attendance of 113, most of whom were from that section, and many of whom we expect some day to enroll as members of the Society.

The meeting opened with a picture entitled, "Steel Making Processes" by the U. S. Steel Corp., and was followed by the speaker of the evening, S. C. Spalding, metallurgist of the American Brass Co., Waterbury, Conn., whose subject was "Tools and the Steel."

Mr. Spalding explained the steel metallurgy as applied to the purchase, use and application for tools and parts used in the brass industry.

Mr. Spalding is an interesting and practical speaker and everyone present enjoyed his talk.

## GOLDEN GATE MEN INSPECT BIG SHIP

Crowd Learns of Metallurgy  
of the Seas at Meeting

By R. S. Hirst

Golden Gate chapter expresses to Millard R. Hickman of the Matson Navigator Co., San Francisco, its heartfelt thanks for the courtesy extended at the regular meeting of the chapter held November 3. Mr. Hickman, superintendent of engineering of the Matson Navigation Co., J. R. Selfridge, assistant to Mr. Hickman, and Lloyd Kennedy, chief engineer of the S. S. Maui, were the speakers.

Seated at the first table in the dining room on Pier 32 with Vice-Chairman Howard S. Taylor and the gentlemen mentioned were two people whom we welcomed home after an extended European trip this last summer, Dr. and Mrs. W. J. Crook of Stanford University. Dr. Crook is a past chairman and is now a member of the executive committee of the chapter, but this is the first time that Golden Gate chapter has had the honor of having Mrs. Crook as a guest. Several other ladies were also our guests.

George Nelson, chairman of the educational committee, called attention to the new classes in the chapter's course in practical metallurgy. Mr. Taylor then introduced Dr. Crook and asked him to tell the members and guests something about his trip. He obliged with a most interesting talk about the several countries they visited and brought out points of interest.

Mr. Hickman was introduced, and his talk on the ships operated by the Matson Line was a revelation to most of us present. We had never stopped to think that these are floating hotels with better equipment and service than most hotels on land. He then spoke of the mechanical side and we learned about the application of iron and steel to ships. He showed us some turbine blades and explained their use and the different kinds of steel employed.

Mr. Hickman then turned us over to Mr. Kennedy, who invited us to a trip through the S. S. Maui, and what a trip! We had the run of the ship. We went down to the boilers and the working parts and we climbed down and up stepladders and then to the staterooms, dining rooms, kitchen, card room and parlors.

It was a different kind of a meeting. Golden Gate chapter prides itself on being an educational chapter—an institution if you please—and we made good here.

## NEMSER TALKS HIGH SPEED TO HARTFORD

More Than 100 Men Present  
At Nov. 10 Meeting

By J. Allison

The Hartford chapter had an attendance of over 100 on Nov. 10 to hear David A. Nemser, chief metallurgist of Pratt & Whitney Co. and a prominent member of the chapter, discuss the heat treatment and physical properties of high speed steel. Mr. Nemser is a graduate in chemical engineering of the Carnegie Institute of Technology, and has been in the metallurgical department of Pratt & Whitney Co. since 1923. He has had a great deal of experience with high speed steel from the consumer's viewpoint in the small tool work of Pratt & Whitney.

After discussing the properties conferred by the different alloys in high speed steel he dealt at length upon proper hardening practice. Electric furnaces equipped with gas curtains give the advantage of being able to duplicate time-temperature schemes. The salt bath, being a vertical pit furnace, offers a decided advantage in hardening tools which have long shanks. In hardening threaded tools the furnace atmosphere must be of proper proportions during every instant of heating to prevent scaling.

No gaseous combination of carbon and oxygen with carbon in excess can offer a truly neutral atmosphere. The solution lies in the application of an inert gas. A truly neutral gas should permit the production of parts free from scale or decarburization.

A full heat of 2310 to 2340° F., with a proper quench, will insure full secondary hardening in an 18-4-1 high speed steel with carbon 0.65 to 0.75 per cent. A soak at the hardening temperature is not advisable if uniform results are to be expected upon tempering. Tools ¼ in. in diameter and smaller do not require a preheat. Moderate sized tools should be given a single preheat at 1450 to 1550° F. Large tools should be double preheated at 1200 and at 1650° F.

The limited time which can be allowed the tools in the high test chamber makes good carbide distribution essential if complete solution is to be obtained. For this reason the following standards of allowable carbide segregation have been adopted by the Pratt & Whitney Co.:

"Up to 1½" dia. no segregation streaks are allowed.

"1½" to 3" dia. edge must have carbides nicely distributed. Streaks permissible at center. Hooks not permissible.

"Over 3" diameter edge must have carbides well distributed. Streaks or hooks permissible at center. Complete cellular structure at center not permissible."

Micros at 100 magnifications are made on annealed bars. Where it is possible upset forgings are used in place of large bars to secure better carbide distribution at the center.

The discussion led by Lester A. Lanning, chief metallurgist, New Departure Mfg. Company, brought out many interesting points and it lasted over an hour. A. H. d'Arcambal called attention to the practice recommended for reducing distortion in hardening high speed steel by hardening, annealing, finish machining and hardening again. He said that the experience at Pratt & Whitney did not prove this treatment of value.

### A. T. C. CO. OFFERS NEW VALVE

Automatic Temperature Control Co., Philadelphia, is offering a new motor-operated control valve, made in either rotary or slide stem type.

### EQUIPMENT WANTED

Brinell Hardness Testing Machine—Rockwell Hardness Testing Machine—Tensile Testing Machine—Bench Microscope with illuminator for metallurgical analyses—Charpy and Izod Testing Machines—Complete photomicrograph equipment.

Give age of equipment, make, condition, and lowest cash price. Address 12—20

### Employment Service Bureau

Address answers care of AMERICAN SOCIETY FOR STEEL TREATING, 7016 Euclid Avenue., Cleveland, unless otherwise stated.

#### POSITIONS WANTED

STEEL FOUNDRY METALLURGIST: Recent technical graduate with 4 years experience in acid electric practice is available for control and research position. Capable of handling a laboratory and well versed in heat treatment of plain and alloy steel castings, sand control problems and metallography. Age 25. Single. Will go anywhere, foreign service considered. Salary about \$250.00 per month. At present employed. Address 12-5.

CHEMIST-METALLURGIST: Broad experience covering ferrous and non-ferrous metals and alloys, including those of the rare metal group. Can direct activities of a metallurgical department requiring usual or unusual duties. Address 12-15.

METALLURGIST: 27, single. Experience in manufacture and heat treatment of alloy steels. Also investigative and complaint work. Available on short notice. Address 12-10.



## BOSTON INTERESTED BY A. H. D'ARCAMBAL

1932 President Discusses  
Machinability Nov. 4

By H. E. Handy

The November meeting of the Boston chapter was held at Massachusetts Institute of Technology on Nov. 4, a dinner at Walker Memorial in honor of President-Elect d'Arcambal being attended by about 75 members and guests.

In the form of a coffee talk, Bruce A. Rogers and Leland R. Van Wert of Harvard Engineering School presented their motion picture depicting photographically the A-3 transformation in pure iron at a magnification of 30 diameters. The pictures were remarkably clear and showed distinctly the changes as they took place, all of which were ably described by Mr. Van Wert.

The guest speaker of the evening was A. H. d'Arcambal, consulting metallurgist for Pratt & Whitney, who, as on several former occasions, was enthusiastically greeted by the one hundred and fifty members and guests who were present.

"Machinability of Metals" was the subject of his talk and he covered quite thoroughly the progress which has been made in cutting tools since his last talk before the Boston chapter, touching somewhat on the recent further developments of tungsten and tantalum carbides. Mention was also made of the value of chromium plating in increasing the life of tools and gauges as well as the reclamation of these parts. Particular attention was given to the subject of lubricants used as cutting media, with special reference to mixtures of sulphur base and light mineral oils for use in machining various metals.

An hour's discussion followed Mr. d'Arcambal's most interesting presentation, among those taking part including Dr. George B. Waterhouse of M. I. T. and Dr. Albert Sauvage, Gordon McKay Professor of Metallurgy at Harvard, and an honorary member of the Society. The evening was very enlightening.

## 100 AT ROCHESTER MEETING

R. J. Cook and Garson Meyer Address  
Chapter at November Meeting

By J. M. Keating

The Rochester chapter held its second meeting of the season at the Powers Hotel on Nov. 9.

The coffee talk was given by Garson Meyer, chief chemist of the Camera Works, Eastman Kodak Co., on "A Chemist's Impression of a Steel Salesman." His talk was very interesting.

Following the dinner the speaker of the evening was R. J. Cook, vice-president and factory manager of the Wallace Barnes Co., Bristol, Conn. He was introduced by Chairman Bob Kimber.

His talk was on "Springs—Their Manufacture and Heat Treatment." The popularity of this talk was attested by the large turnout of about one hundred members and guests.

## B. F. SHEPHERD IN EUROPE

B. F. Shepherd, chief metallurgist for Ingersoll-Rand Co., Phillipsburg, N. J., and a director of the Society, is making a brief trip abroad. He will return in January.

## DEEP DRAWING STEELS PAPER ENJOYED BY INDIANAPOLIS

James J. Bowden Is Speaker

By A. E. Focke

The regular meeting of the Indianapolis chapter was held in the Roof Garden of the Hotel Severin, Nov. 2.

James J. Bowden, chief metallurgist of the Republic Steel Corp., Warren, Ohio, spoke on "Deep Drawing Steels." Mr. Bowden's lecture was well prepared and contained data and fundamental information of interest to the average man as well as the experienced sheet metal worker.

The speaker pointed out the importance of an equi-axed structure in the steel and showed the significance of grain size. He then developed the application of the bending, tensile, cup indentation, hardness and microscopic tests in determining the drawing qualities of steel.

The speaker had samples and photomicrographs to illustrate his points and these were supplemented by samples of intricate drawing work prepared by our fellow member, Carl Winkler, and his associates at the Schwitzer-Cummins Co.

## "HARD FACING" IS WASHINGTON TOPIC

R. O. Day Interests Members  
at Meeting on Nov. 20

By W. R. Angell

The Washington chapter was fortunate indeed in having for its speaker R. O. Day of the Union Carbide & Carbon Research Laboratories at its November meeting. Mr. Day, assisted by Mr. Wilson, had a lot of valuable information concerning "Hard Facing." The meeting was held Nov. 20.

The speaker, introduced by Chairman Walter Dietrich, proceeded with his story of hard facing, which Mr. Day states any welder can apply with little practice. Slides were shown which illustrated the application of hard facing to many objects, including aeroplane skids, shovels, dies, dredging buckets, rack drills and many others. The life of many parts has been increased 20 times. Different grades of material are used for the hard facing and sometimes in combination with crushed tungsten carbide.

Louis Jordan, technical chairman for the evening, then invited the members and guests to join in on the discussion. It might be said that the discussion lasted longer than the lecture which shows in a convincing way the manner in which the talk was received.

A novel method of holding the members and friends until the end of the meeting was initiated by our chairman. Printed cards for members and non-members with spaces for names and addresses were distributed. These cards were taken up at the end of the meeting and a drawing was held. The chapter pays the dinner expense to the lucky one whose card was drawn.

Charles M. Gearing, division manager of the Meriden plant and member of the board of directors of the New Departure Manufacturing Co., has been selected to fill the position of general works manager with offices in Bristol, Conn., according to announcement made by the management recently.

## T. H. NELSON TALKS FOR OWN CHAPTER

Philadelphia Hears Popular  
Fellow Member on Nov. 2

By Adolph O. Schaefer

Philadelphia's members gathered at the Engineers' Club on Nov. 2 for the second regular meeting of the infant season. Roast beef and sea bass were consumed in quantity and with gusto by those so inclined. Everybody seemed to have friends and be glad to see them.

Consequently the note of optimism struck by the coffee talker was timely and well received. The Philadelphia Electric Co., one of the chapter's staunch sustaining members, furnished us with E. B. Myers, manager of the Philadelphia district.

Mr. Myers' theme was that times were not as bad as some people would have us believe, that business is there if you go out for it, and that providence helps those who help themselves and others. The first proposition he demonstrated by the power sales figures in Philadelphia for the last several years, the second by the electric range and the bulb campaigns his company has just carried on. The third proposition was proven by the other two.

The technical session was a complete and absolute success. For months we have heard reports of the pleasure and profit other chapters have received from hearing our own chapter member, T. Holland Nelson. This year's program committee took the matter into their own hands and invited him to talk to his fellow members.

The subject was "Heat and Corrosion Resistant Alloys," and Mr. Nelson began with a historical summary illuminated by his personal experiences with Sir Harry Brearley. His rare ability to make even the most complicated subject seem simple and understandable made the talk a pleasure to everybody present. The latest developments in the field and the controversial points were not neglected, and the discussion at the close was long and hard.

## LEHIGH LEARNS OF AIRCRAFT METALS

H. J. Fischbeck Enlightens  
Men at Nov. 6 Meeting

By O. V. Greene

H. J. Fischbeck, metallurgist, of Pratt & Whitney Co., Hartford, in a talk before the Lehigh Valley chapter on Nov. 6, gave a very interesting account of the history and development of aircraft engines.

The evolution of the gasoline engine was traced from the first internal combustion engine invented in 1880 to the present cyclone and hornet types. The first internal combustion engine was rated at about 500 lb. per h.p. This figure was gradually decreased up to 1900 when it had been reduced to about 10 lb. per h.p. After the Wright Brothers glider experiments (1900), they realized the necessity for a lighter engine to successfully propel heavier than air machines. Accordingly the Wrights developed their own design which was a vertical 4-cylinder engine rated at 6 lb. per h.p. and which developed 30 h.p. at 1200 r.p.m. This engine was first used in 1903. The present wasp and hornet engines develop 400 and 500 h.p. respectively at 1900 r.p.m. with weights of less than 2 lb. per h.p.

The metallurgical features of the various parts of present-day radial engine were described in detail. It is particularly interesting to notice that a large amount of the decrease in weight per h.p. was due to the use of strong aluminum alloys. The rigidity of the specifications covering certain chemical and physical requirements of the raw material and the inspection of finished material was given as the reason why motor failure was seldom due to defective parts. The block test every motor receives before being released was described in detail.

Mr. Fischbeck's talk was illustrated with slides showing the various parts of wasp and hornet motors and a number of interesting views of commercial applications.

The Chicago office of Surface Combustion Corp. has contracted with the Inland Steel Co. to build two Mantle recuperators, to be used on 14" billet mill furnaces, already in operation at the Indiana Harbor plant. The recuperators are of the metallic type and are replacing regenerators.

## TALK ON "STEEL DEFECTS" IS ENJOYED BY 65 AT TRI-CITY

N. L. Deuble is the Speaker

By R. H. Lind

N. L. Deuble, metallurgist for Republic Steel Corp., Canton, Ohio, spoke before 65 members of the Tri City chapter at a dinner meeting held Dec. 1. His subject was "Defects in Steel." The lecture was illustrated by slides.

Mr. Deuble spoke on many of the common and uncommon causes of failures encountered by forging and fabrication practices. He stated that cold centers or overheating of forging stock are often causes of defects. These defects differ from mill defects in that they have no definite direction while mill defects are in one direction. Inaccuracy in manufacture, such as grinding off too much of a case hardened piece often causes soft surfaces. The heat produced in grinding may also cause undue expansion and defects.

Design of the finished product may overcome many difficulties, such as sharp corners which induce concentrated stresses or heavy and thin sections in the same piece which when quenched produce many faults due to unequal contraction. Gears often do this; the outer ring cooling more slowly than the center thin section causes a crack in the outer ring. Hard spots may often come from carbon deposits within a furnace chipping off and falling between two pieces of steel giving a case hardened surface at that point and not from inclusions.

Chief August Schmidt of the Rock Island Fire Department also gave a short interesting talk on "Horrors and Prevention of Fires."

## NORTHWEST STUDIES X-RAYS

W. G. Praed Illustrates Uses of Rays in the  
Metal Industries

By A. C. Forsyth

At the regular monthly meeting of the Northwest chapter William G. Praed, of the Claud S. Gordon Co., Chicago, gave a talk on "X-rays as an Aid to Industry." With the aid of lantern slides the speaker illustrated many commercial uses for X-rays. He showed how X-rays could be used to find various kinds of flaws after which changes in processing could be made to eliminate them.

A moving picture, made by the General Electric Co., illustrated the manufacture of X-ray equipment from the raw materials to the finished unit.

The lecture was followed by a discussion in which Mr. Praed gave 3.5 inches of steel and 9 inches of aluminum as the penetrating depth of commercial X-ray units.

## DR. S. W. STRATTON DIED OCT. 18

Dr. Samuel W. Stratton, chairman of the corporation of Massachusetts Institute of Technology and former director of the U. S. Bureau of Standards, died suddenly on October 18 at the age of 70 years.

Republic Steel Corp. is announcing a new product, Toncan iron tin plate, a rust-resisting tin plate. Possessing the same base analysis as Toncan copper-molybdenum iron, the new iron tin plate is endowed with the same rust and corrosion-resistance characteristic. This enables it to be used in many cases where ordinary tin plate would fail.

## YORK'S FIRST TWO MEETINGS POPULAR

Jordan Korp and L. B. Grindlay  
Speak in Sept., Oct.

The York chapter has opened the 1931-32 season with two successful meetings up to the present time; one at York on Sept. 9 and a second at Waynesboro on Oct. 14.

The first meeting was addressed by Jordan Korp, metallurgical engineer of the Leeds and Northrup Co., Philadelphia. The talk by Mr. Korp was on the subject of "The Care of Tools and Their Heat-Treatment." This talk, illustrated by lantern slides, was presented in such an inimitable way by Mr. Korp that it provided a wonderful start to what is apparently going to be the York chapter's greatest season. More than sixty turned out to hear Mr. Korp and to discuss his paper. The willingness of the speaker to enter into discussion made this feature outstanding.

The Waynesboro meeting was divided into two parts; the first was a series of plant visitations which were held in Hagerstown, Md., during the afternoon. The visitations consisted of visits to the Pangborn Corp. and the Moller Organ Works. A third visit was planned to the Security Cement Plant, but it was found impossible, because of lack of time, to avail ourselves of this opportunity. The group then came back to Waynesboro where dinner was served to eighty-five friends, guests and members.

At the conclusion of the dinner it was the privilege of our Chairman, George J. O'Neill, to announce that the York chapter was a reality by virtue of the action of the Board of Directors at the National Convention held in Boston during the latter part of September.

The speaker of the evening was L. B. Grindlay, manager of the metallurgical department of Republic Steel Corp., Youngstown, who presented an illustrated talk on the subject of "Republic Electric Resistance Welded Pipe." This talk, as presented by Mr. Grindlay, proved of great interest, and, inasmuch as the process itself is one of the newer metal developments, considerable discussion was aroused.

## NORTHWEST WELDING MEETING

Continued from Page One

The exhibits were of particular interest and drew large crowds at all sessions. The exhibitors were: Air Reduction Sales Co., Crane Co., General Electric Co., Linde Air Products Co., Lincoln Electric Co., Smith Welding Equipment Corp., Westinghouse Electric & Mfg. Co.

Because of the great success of this conference the chapter believes it will be well worth while to make it an annual affair. It has done much to bring desirable publicity to the chapter and add to its prestige in the community. A number of applications for membership received were directly due to the conference.

The committee in charge consisted of Chairman Harry J. Kicherer of the Caterpillar Tractor Co. and Messrs. Ralph L. Dowdell, professor of metallurgy, University of Minnesota, and Thomas O. Hanson of the Central Steel & Wire Co., Minneapolis.

Chairman A. F. Moyer and all the executive committee believe the undertaking was well worth while.

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